REMARKS

This Amendment is being filed concurrently with a Request for Continued Examination (RCE).

The Final Office Action mailed June 1, 2004, has been carefully reviewed and by this Amendment Applicants have amended claims 1, 2, 4 and 8. Claims 1-9 are pending in the application.

The Examiner rejected claims 1-9 under 35 U.S.C. 112, first paragraph, as containing subject matter not described in the specification in such a way as to enable one to make and use the invention. Specifically, the inclusion of a "database" in claims 1, 2 and 4 was not sufficient to make and use the invention. The Examiner also rejected claims 1-9 under 35 U.S.C. 101 as being directed to non-statutory subject matter, particularly to a mathematical algorithm without any limitation to a practical application.

By this Amendment, Applicants have amended claims 1, 2 and 4, as well as the specification, to affirmatively set forth that the present invention is implemented and performed using a computer. This explicit identification of the embodiment of the claimed classifier as being within a computer does not constitute new matter for several reasons.

First, the fact that the claimed invention was contemplated and intended to be performed using a computer was clearly intimated through description of the inventive document classifier as effecting "automatic" document classification (see page 1, line 10; page 6, line 24; page 13, line 12). In Merriam Webster's Collegiate Dictionary, Tenth Edition, "automatic" is defined as "a machine or apparatus that operates automatically". Thus, "automatic" operation requires a computing device as would be known and understood by virtually anyone in today's highly automated society.

Second, the disclosure of the classifier as an "entity", and not as a mental process, also affirms that a computer-based implementation was contemplated and intended. The classifier is repeatedly described in the original application as being an "entity" having characteristics and being capable of performing affirmative processes that could only be demonstrated and realized using a computer (see page 3, lines 20-21: *"the classifier developed will select and classify* any of new documents introduced into an appropriate cluster within the classification stage"; page 3, lines 24-25: "the LSI space improves the performance as well as *the robustness of the document classifier"*; page 4, lines 4-6: *"the new classifier sets* up a Bayesian posteriori probability function for the differential document vectors..., selecting the candidate having a highest probability"; page 13, line 12: *"automatic classification by the* DLSI space-based *classifier"*, etc.).

Third, the explicit identification of the use of a computer in conjunction with the claimed classifier does not constitute new matter in that persons of ordinary skill in the art would have understood from the original disclosure that the use of a computer was necessary to the invention as disclosed. Specifically, given the practical application to which the present invention is directed, namely the classification of huge numbers of documents (as would be understood by the reference on page 1, lines 15-20, to information retrieval systems implemented across distributed computer networks), as well as the inherent complexity of language analysis and the fact that "a staggering number of dimensions are required to represent the featuring space of any practical document" (page 1, lines 26-28), persons of ordinary skill would have understood the need for a computer to implement the disclosed process steps.

That the use of a computer is inherent to the invention as disclosed may be further illustrated by example. According to Google™, there are approximately 4,285,199,774 web pages at this time. A modern computer can search one keyword from such a huge number of

documents in about 0.3 seconds. By contrast, a person working by hand for 8 hours a day, 240

days per year, would need 446×10^4 years to classify this number of documents (and that

assumes that such person could process one document every two minutes, allotting one minute

for reading and one minute for classification). Even if there were only 500,000 documents, a

modern computer could complete a search of 10 keywords among 10 classes of documents in

about 0.4 seconds while, assuming a reading rate of one file every 8 minutes, a person working

by hand would require about 350 years to classify this number of documents. Even if the manual

reading rate were increased by 100 times, the classification time would still be 3.5 years.

Clearly, the vast number of documents within document retrieval systems currently available

over distributed computer networks like the Internet precludes manual document classification of

the type being claimed by the present invention.

Hence, in view of the complexity of the method of the presently claimed

invention and the task of document classification to which such invention is limited, the explicit

identification of the use of a computer merely states what would have been understood of

persons of ordinary skill in the art and cannot be considered new matter.

With respect to the issue of the statutory nature of the claimed subject matter

under 35 U.S.C. 101, the present invention is directed to an automatic document classification

method that classifies documents in accordance with clusters within a database. Such a method

may be used for information retrieval or office document processing as noted at page 1, lines 15-

20, and at page 2, lines 15-20, but the practical application remains a process by which

documents are classified as belonging to an identified cluster within a database.

As included in each of claims 1, 2 and 4, the step of "using the classifier to

classify a document" is an affirmative limitation of the present invention to a practical

application, as required by the Examination Guidelines for Computer-Related Inventions

(hereinafter "the Examination Guidelines"). This limitation to a practical application renders the claims proper statutory subject matter under 35 U.S.C. 101 in accordance with the Examination Guidelines and the examples set forth therein, copies of which are attached for the Examiner's convenience.

First, as set forth in the "Matrix" example within the Examination Guidelines, a method of performing matrix multiplication is discussed, the method using a general purpose computer in which no specific hardware or software is disclosed in the specification. In the discussion of the hypothetical claim 2 within this "Matrix" example, the Examination Guidelines provide in Note 5 that the limiting of the output result of claim 2 to a practical application, namely that the output result "simulates space craft operation in the yaw and pitch plane of flight" renders the invention statutory under 35 U.S.C. 101. Note 5 also clarifies that when the preamble states the purpose of the invention and the claim thereafter includes a step that performs this purpose, the performance of the purpose is not a statement of intended use but rather limits the claim to the practical application being performed.

A similar statutory outcome was determined in the "Matrix" example in connection with hypothetical claim 3 in which, again, the output result was deemed to be limited to a practical application having real world value and providing immediate benefit (see Note 5 in connection with claim 3 of the "Matrix" example).

In the "Neural Network" example of the Examination Guidelines, a method of training a neural network node using a general purpose computer is discussed. Hypothetical claim 1 of this example sets forth a series of steps to be performed on a computer by which sets of target points are provided from which, based on threshold values, training target points are provided. The last step of the claim specifies, "using the ... target training points to train the neural network". In Note 5 of the "Neural Network" example discussing this last step, the

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Examination Guidelines state that the claimed invention is limited to the practical application of training the neural network, which is a functional step producing a practical effect, and is therefore statutory under 35 U.S.C. 101.

For at least the reasons that the claimed subject matter identified in these examples in the Examination Guidelines constitute statutory subject matter, claims 1, 2 and 4 of the present invention are also statutory under 35 U.S.C. 101. In each of current claims 1, 2 and 4, the present invention is limited to the practical application of *classifying a document* using the computerized classifier set up according to the method. The step by which the classifier is used to classify a document is a practical and functional step which places the document within a specified subject matter category or cluster that may be used to facilitate subsequent automated document retrieval processes. In addition, the step of "using the classifier to classify a document" correlates with the stated purpose in the preamble. Again, as stated in the Examination Guidelines, when the preamble states the purpose of the invention and that purpose is thereafter performed in the body of the claim, the performance thereof is not a statement of intended use but rather an affirmative limitation of the claim to the practical application stated (see the "Matrix" example, claim 2, note 5).
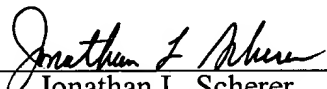
For at least the foregoing reasons, claims 1-9 are presented as being supported by the specification in compliance with 35 U.S.C. 112, first paragraph, and as being directed to statutory subject matter under 35 U.S.C. 101. Favorable reconsideration and allowance thereof is requested.

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With this amendment, the application is submitted as being in condition for

allowance. Should the Examiner have any questions or comments, the Examiner is cordially

invited to telephone the undersigned attorney so that the present application can receive an early

Notice of Allowance.

Respectfully submitted

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Enclosure

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Abstract

A computerized method for automatic document classification based on a combined use of the projection and the distance of the differential document vectors to the differential latent semantics index (DLSI) spaces. The method includes the setting up of a DLSI space-based classifier to be stored in computer storage and the use of such classifier by a computer to evaluate the possibility of a document belonging to a given cluster using a posteriori probability function and to classify the document in the cluster. The classifier is effective in operating on very large numbers of documents such as with document retrieval systems over a distributed computer network.